



## EXECUTIVE SUMMARY

### Background

In the fall of 2005, the Montana Department of Transportation (MDT) initiated a corridor planning process along Montana Primary Highway 78 (MT 78) in order to comprehensively address future transportation needs, prioritize transportation projects, and foster cooperative state and local transportation planning efforts. The *MT 78 Corridor Study* is part of MDT's corridor planning process emphasizing public involvement and early consideration of environmental issues. This planning process is intended to save the state time and money by giving a context to later planning documents and helping to analyze the feasibility of various improvement options.

MT 78 is a two-lane highway that begins at the town of Red Lodge and runs northwest through the towns of Roscoe, Absarokee, and Columbus before intersecting with Interstate 90. The portion of the highway chosen for this study begins at Mile Post (MP) 5± northwest of Red Lodge and extends to the bridge at the south end of Roscoe (MP 20±). MT 78 is part of the state Primary Highway System and is functionally classified as a rural minor arterial route.

### Goals and Objectives

The following corridor goals and objectives were developed in cooperation with MDT, FHWA, and the public:

- Improve safety conditions and address crash concentrations within the corridor.
- Improve roadway geometry within the corridor, including horizontal alignment and vertical alignment, meeting current MDT design standards where practicable.
- Minimize social, environmental, and economic impacts in the corridor where possible.
- Maintain the aesthetic character of the corridor.
- Balance the needs of all users, including local residents, tourists, agricultural vehicles, school buses, motorcyclists, and bicyclists.

### Public Involvement

The MT 78 Corridor Study utilized a public involvement process to engage area residents in a dialogue about the existing conditions and use of the corridor. The process also sought to inform residents about potential improvement options for the corridor and to seek citizen input on those options. Resource agency coordination was initiated early in the process to identify potential resource constraints and future permitting requirements.

Four public meetings were held to identify issues and concerns, solicit input regarding goals and objectives, discuss preliminary improvement options, and to present the final set of recommended improvement options. Newsletters were prepared in advance of each of the public meetings and a website was developed.



Representatives from the U.S. Fish and Wildlife Service (USFWS), Montana Fish, Wildlife, & Parks (MFWP), Environmental Protection Agency (EPA), the Montana State Historic Preservation Office (SHPO), the Montana Department of Natural Resources and Conservation (DNRC), and the Montana Department of Environmental Quality (DEQ) were invited to attend a resource agency coordination meeting. Additionally, MFWP and the U.S. Army Corps of Engineers (USACE) sent letters in response to a request for information regarding the MT 78 corridor.

## Existing Conditions

Based on a planning-level overview of natural resources in the corridor, it was determined that there would be no impacts to the following resources as a result of any future improvement project.

- Land Ownership
- Floodplains
- Hazardous Waste Sites
- Visual Resources
- Public Parks and 6(f) Resources

The following resource areas may potentially be impacted by future projects. Future study requirements are listed with respect to each resource area.

| Resource   | Future Requirements  |
|--|--|
| Water Bodies   | Biological Resource Report (BRR); review stream crossings for specific project   |
| Irrigation Systems                                       | BRR; review irrigation ditch crossings for specific project  |
| Wetlands   | BRR; field review for specific project   |
| Air Quality  | Cursory review of short-term effects for specific project  |
| Water Quality  | BRR; cursory review of short-term effects for specific project   |
| Fish and Wildlife Resources                              | BRR; review potential impacts resulting from activities within or adjacent to West Red Lodge Creek and East Rosebud Creek for specific project |
| Wildlife Habitat   | BRR; cursory review of short-term effects for specific project   |
| Threatened and Endangered Species and Species of Concern | BRR; coordination with USFWS and MFWP for specific project   |
| Historic, Cultural, and Archaeological Resources         | Cultural Resource Inventory (CRI); review for specific project   |
| Prime Farmland   | Farmland Conversion Impact Rating Form   |
| Noise  | Cursory review of potential noise receptors for specific project   |



An investigation of existing conditions of the MT 78 transportation system identified a number of geometric and operational issues. These issues are described in the following list.

1. Steep grades exist over a large portion of the corridor. Grades up to and exceeding seven percent, which is the maximum recommended grade for mountainous terrain, are common, especially on the southern portion of the corridor.
2. Sharp horizontal curves exist at the southern and northern ends of the corridor and at a few scattered locations within the middle portion of the corridor.
3. Passing sight distance is limited due to poor horizontal and vertical alignments. The road is used by agricultural vehicles, trucks, recreational vehicles, and other heavy, slow moving vehicles. The lack of ability to pass presents a potential safety hazard.
4. Stopping sight distance is limited, not only due to poor horizontal and vertical alignments, but also due to slope and clear zone issues. In a number of locations short hills connect steep grades, resulting in a “roller-coaster” effect, which leads to inadequate sight distance. Additionally, steep side slopes and short inslopes narrow the line of sight from the roadway. Inadequate sight distance is a safety concern as wildlife, vehicles, and other obstructions can easily be hidden from a driver’s view, limiting the ability to stop or take other action to avoid collisions. Narrow clear zones allow wildlife to approach the roadway without being seen by drivers.
5. Crash concentrations are located between MP 5± to 9.5± and from MP 18.5± to 20±, as well as in scattered locations between MP 12± to 14± and MP 17± to 18±.
6. Shoulder widths throughout the corridor are not wide enough to accommodate vehicle stops or exclusive bicycle travel.
7. There are few places to pull off the road due to roadway width and the lack of sight distance. This causes problems for all motorists.
8. There are a number of poorly-aligned access points along the corridor. These access points represent a hazard due to limited sight distance, with vehicles entering the roadway at low speeds undetected by drivers approaching at relatively high speeds.
9. According to the MDT bridge sufficiency ratings database, the two existing bridges within the corridor are not deficient.

## Improvement Options

Improvement options were developed to address these deficiencies and to meet the corridor goals and objectives. Fully meeting the corridor goal of improving highway geometry to meet current



MDT design standards will require full reconstruction. MDT programs funding for roadway improvements through a 20-year planning process at the district level. Though individual projects may be reprioritized over the course of the 20-year planning horizon, all available funds are allocated to listed projects over a five-year period. During the last planning process, which occurred in 2006, there were no funds allocated for the portion of MT 78 within the corridor study area. STPP funding for this level of improvement is highly unlikely over the short term but may be available toward the end of the planning horizon depending on other Primary Highway System needs within the Billings District. For this reason, full reconstruction is seen as a long-term corridor recommendation.

## Recommendations

### Long-Term Recommendations

Two reconstruction projects are recommended within the study area. Project A would involve full reconstruction from MP 5.2± to MP 12.0±. Based on high crash concentrations and the anticipated ability of Project A to improve safety in this portion of the corridor, Project A is recommended as a high priority over the long term at a cost of \$17,900,000 in 2006 dollars.

Project B, a full reconstruction from MP 12.0 to the end of the corridor, is recommended as a second priority. Project B includes Roscoe Hill, located at the far northern part of the corridor (MP 18.1± to 21.0±). Options for the Roscoe Hill portion of the corridor include an overlay and widen scenario where minor changes would be made to the vertical curves to improve sight distance (Alignment Option 1), a full reconstruction option that would rework the vertical alignment while utilizing the existing horizontal alignment (Alignment Option 2), and a full reconstruction option where new horizontal and vertical alignments would be developed to provide grades within the recommended standard (Alignment Option 3). Based on relative costs and benefits, the recommended option for Project B is Roscoe Hill Alignment Option 1. Project B / Roscoe Hill Alignment Option 1 is estimated at \$16,800,000 in 2006 dollars.

### Near-Term Recommendations

In the interim period before funding is allocated to reconstruction, progress towards meeting the goal of improving safety conditions in the corridor may be possible through implementation of spot improvements. These improvements are listed in the table below and are ranked in order of recommendation. Ranking group 1, for example, represents the projects that are recommended for completion first, ranking group 2 represents those projects that should be done second, and so on. There is no ranking of projects within a group. Costs for these improvement options are presented in 2006 dollars and range from \$2,800 to \$1,108,000.



### Recommended Spot Improvements

| Ranking Group | Approximate MP                    | Potential Spot Improvement   | Estimated Cost (2006\$) |
|---------------|-----------------------------------|--|-------------------------|
| 1             | 6.9, 10.7, 12.1, 13.1, 13.9, 15.1 | Update school bus stop signing   | \$6,700                 |
| 2             | 13.0                              | Trim vegetation for intersection visibility                              | \$2,800                 |
| 3             | 8.2                               | Realign Upper Luther Road and build a school bus pullout / Park and Ride | \$151,000               |
| 3             | 13.0                              | Realign Lower Luther Road and build a school bus pullout                 | \$164,000               |
| 4             | 9.3                               | Shave side slopes to improve sight distance                              | \$906,000               |
| 5             | 7.4                               | Shave side slopes to improve sight distance                              | \$107,000               |
| 5             | 8.0 – 8.2                         | Shave side slopes to improve sight distance                              | \$178,000               |
| 6             | 15.8                              | Shave side slopes to improve sight distance                              | \$720,000               |
| 6             | 16.8                              | Shave side slopes to improve sight distance                              | \$1,108,000             |

### Potential Funding Sources

Potential funding sources for these projects include funds from the Billings district maintenance budget; the Stillwater mine; the Highway Safety Improvement Program (HSIP); and the Surface Transportation Program-Primary (STPP).